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Some Helminth Parasites of the Japanese Shrew Mole from the Izu Peninsula

By

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町田昌昭*・内田明彦**: 伊豆半島のヒミズより得た寄生蠕虫類

A survey was made on the parasites of the small mammals around the Amagi Pass, Izu Peninsula, in November, 1981 and March, 1982 under the Natural History Research Project of the Japanese Archipelago by the National Science Museum, Tokyo. This report concerns four species of helminths, two of them new, from the Japanese shrew mole, *Urotrichus hondonis* THOMAS (= *U. talpoides hondonis* THOMAS). The trematodes and acanthocephalans were fixed in acetic sublimate under cover glass pressure, stained with Heidenhain's hematoxylin and mounted in balsam. The cestodes were relaxed in cold saline and preserved in 70% ethanol. The nematodes were preserved in 5% formalin and cleared in Gater's solution. The specimens are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo.

From *Urotrichus talpoides*, YAMAGUTI (1954) reported *Brachylaima tokudai* as a new trematode from Mt. Ontake, and OHBAYASHI *et al.* (1972a, b, 1973) described ten helminth species including four new ones from Nikko and Mt. Fuji, that is, *Ectosiphonus* sp. (Trematoda); *Hymenolepis* sp. (Cestoda); *Thominx urotrichi* OHBAYASHI, MASEGI et KUBOTA, 1972, *Capillaria himizu* OHBAYASHI, MASEGI et KUBOTA, 1972, *Spirura nipponensis* OHBAYASHI, MASEGI et KUBOTA, 1972, *Angiostrongylus minutus* OHBAYASHI, MASEGI et KUBOTA, 1973, *Rhabditis* sp., Rhabditoidea gen. sp. (larva), *Toxocara canis* (WERNER, 1782) (larva) and *Porrocaecum* sp. (larva) (Nematoda). OHBAYASHI (1975) briefly discussed the incidence of the helminth parasites in shrew moles in Japan. Recently, SAITO *et al.* (1982) found a new trematode, *Macroorchis chimarrogalus*, from *Chimarrogale platycephala*, *Urotrichus talpoides*, etc. from Yamagata and Niigata Prefectures. Including four species in the present report, sixteen helminth species have been detected from the Japanese shrew mole.

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Trematoda

Nanophyetidae

Macroorchis himizu sp. n.

(Figs. 1-2)

Habitat. Intestine of *Urotrichus hondonis* (= *U. talpoides hondonis*); Izu Peninsula, Japan.

Specimen No. NSMT-Pl 2495.

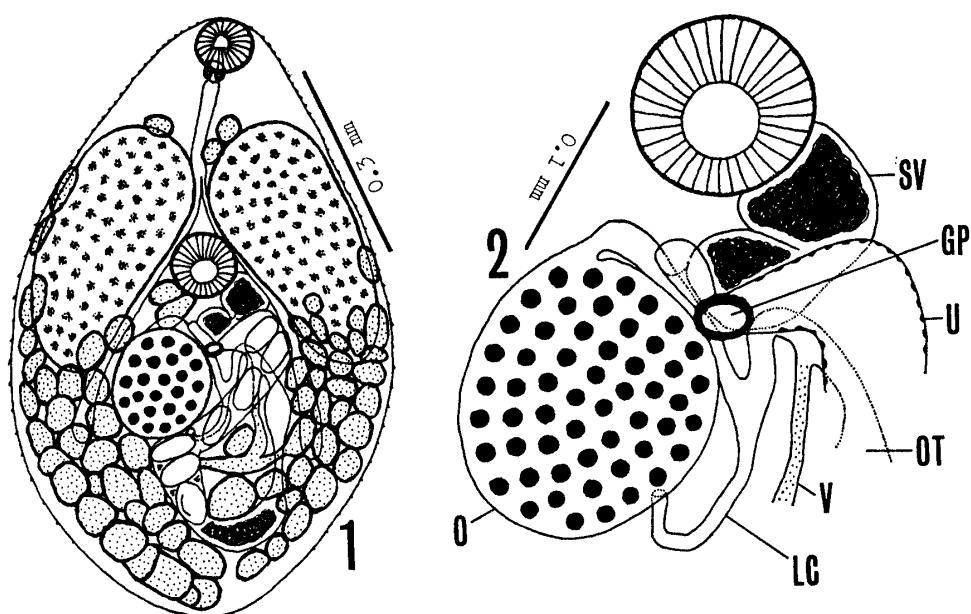
Description. Based on 10 specimens. Body small, oval, 0.75–1.10 mm long by 0.44–0.61 mm wide at postacetabular level. Cuticle with minute spines. Oral sucker rounded, $51-83 \times 75-96 \mu$; prepharynx absent; pharynx globular, $28-56 \times 33-67 \mu$; esophagus 0.09–0.23 mm long, bifurcating a little anterior to acetabulum; caeca narrow, running between acetabulum and testes, and terminating about midway between posterior margin of testes and posterior extremity. Acetabulum spherical, $87-116 \times 77-103 \mu$, usually larger than oral sucker, immediately pre-equatorial. Sucker ratio 1: 0.97–1.27.

Testes very large, elongate oval, $0.35-0.49 \times 0.15-0.21$ mm, symmetrical, one on each side of acetabulum, extending well anterior to it. Vas efferens arising from midlevel of testes and running transversely to enter into anterior part of seminal vesicle. Seminal vesicle bipartite, $46-78 \mu$ wide, antero-sinistral to ovary or occasionally sinistral to it. Genital pore median, a little posterior to acetabulum.

Ovary oval, $0.12-0.19 \times 0.09-0.16$ mm, postero-dextral to genital pore or occasionally posterior to it. Oviduct arising from anterior end of ovary, descending to give off Laurer's canal, then ascending to receive vitelline reservoir, and descending once again to enter into ootype. Laurer's canal opening dorsally near posterior margin of ovary. Uterus postacetabular, S- or loop-shaped, descending near posterior extremity. Receptaculum seminis uterum present. Uterine eggs oval, thin-shelled, $58-67 \times 33-41 \mu$. Vitelline follicles extending from level of anterior margin of testes to posterior extremity. Excretory vesicle not visible; pore terminal.

Discussion. ANDO (1918) created the genus *Macroorchis* to accommodate a single species, *M. spinulosus* ANDO, 1918 which possesses a saccular seminal vesicle and an oval seminal receptacle. Recently, SAITO *et al.* (1982) described two new species of *Macroorchis*, *M. chimarrogalus* and *M. elongatus*, from *Chimarrogale platycephala*, etc., of them the former was obtained also from *Urotrichus talpoides*. They stated these specimens have two bulbs of seminal vesicle and no seminal receptacle, but did not discuss whether the genus *Macroorchis* possesses a seminal receptacle or not. According to the personal communication from SAITO *et al.*, they examined three species of *Macroorchis*, including *M. spinulosus* which they collected, and found no seminal receptacle in them. Consequently they considered that the genus *Macroorchis* does not have any seminal receptacle and that ANDO (1918) had mistaken one of the bipartite seminal vesicles for a seminal receptacle.

The present species resembles *M. spinulosus* and *M. chimarrogalus* in the length of the body, but differs from both in possessing an oval body, usually larger acetabulum than the



Figs. 1-2. *Macroorchis himizu* sp. n. —1. Entire worm (ventral view). —2. Ovarian complex (ventral view). GP, genital pore; LC, Laurer's canal; O, ovary; OT, ootype; SV, seminal vesicle; U, uterus; V, vitelline reservoir.

oral sucker, the oral sucker without a stylet, larger testes and ovary, and anterior extent of the testes. In *M. chimarrogalus*, SAITO *et al.* (1982) illustrated the seminal vesicle as variable in the position, that is, posterior to the ovary (Fig. 1) and antero-dextral to it (Fig. 2). In the present species, the seminal vesicle does not extend beyond postovarian level. The specific name refers to the Japanese name of the host.

Cestoda

Diphyllobothriidae gen. sp. (plerocercoid)

Diphyllobothriid plerocercoids were obtained from the subcutaneous tissues of the trunk. The specimens are up to 21 cm long, and have swollen cephalic end which is somewhat concave medially. The plerocercoid of *Spirometra erinacei* (RUDOLPHI, 1819) occurs in the abdominal cavity, subcutaneous tissues and muscles of various frogs, snakes, birds and mammals. It is probable that the present plerocercoid belongs to *S. erinacei*.

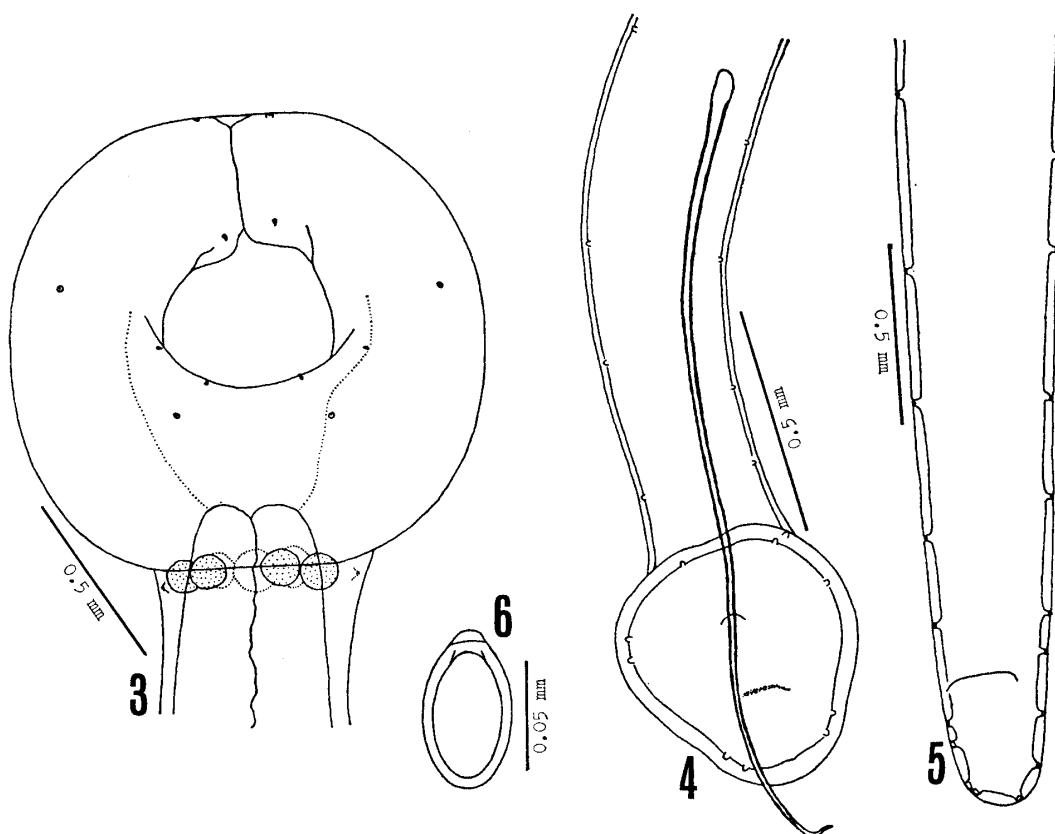
Nematoda

Soboliphymidae

Soboliphyme urotrichi sp. n.

(Figs. 3-6)

Habitat. Stomach of *Urotrichus hondonis* (= *U. talpoides hondonis*); Izu Peninsula, Japan.
Specimen No. NSMT-As 1635 and 1636.



Figs. 3-6. *Soboliphyme urotrichi* sp. n. —3. Anterior end of female (ventral view). —4. Posterior end of male (ventral view). —5. Posterior end of female (ventral view). —6. Egg.

Description. Swollen buccal capsule with a notch on the antero-dorsal surface. Mouth opening surrounded by six spines of internal circle and six sessile papillae of external circle. A total of 20-30 papillae arranged asymmetrically in two lateral rows from just behind buccal capsule to caudal extremity except for middle region. Esophagus cylindrical and muscular. A ring of seven globular esophageal glands, four ventrally and three dorsally, surrounding the anterior end of esophagus.

Male. Based on 3 specimens. Body 12.2-14.0 mm long and 0.41-0.49 mm wide at middle region. Buccal capsule $0.79-0.82 \times 0.75-0.97$ mm; mouth opening 0.39-0.48 mm wide. Esophagus $2.58-2.64 \times 0.30-0.32$ mm. Bursa heart-shaped, $0.50-0.70 \times 0.48-0.62$ mm, with nine papillae along the margin. Spicule slender, 1.78-1.96 mm long, 12.7-15.9 % of body length, tapering distally, with pointed tip. Cloaca 0.32-0.38 mm from caudal extremity.

Female. Based on 5 specimens. Body 15.8-23.2 mm long and 0.48-0.73 mm wide at middle region. Buccal capsule $0.88-1.28 \times 0.98-1.38$ mm; mouth opening 0.46-0.55 mm wide. Esophagus $3.08-3.80 \times 0.32-0.48$ mm. Vulva at posterior end of esophagus. Uterine eggs ovoid, thick-shelled, $70-77 \times 39-42 \mu$, with plug at one pole. Tail 0.30-0.41 mm long, with bluntly rounded tip.

Discussion. SHIMAKURA and ODAJIMA (1934) described *Soboliphyme sahalinense* from *Martes zibellina* from Sakhalin where had belonged to Japan before the World War II. BEZDEK

(1942) considered this species to be synonymous with *S. buturini* PETROW, 1930 taken from *Martes zibellina*, etc. from Kamchatka and Siberia. Thereafter no records on *Soboliphyme* have been made from Japan.

The present species resembles *S. soricis* BAYLIS et KING, 1932 in the buccal capsule having a notch on the antero-dorsal surface, and the eggs with plug at one pole, but differs from it in possessing smaller size of body, the mouth opening surrounded by spines besides papillae, seven esophageal glands, and larger ratio of spicule to the body length. According to BAYLIS and KING (1932) and KARMANOVA (1968), *S. soricis* has been taken from *Sorex araneus* and *Neomys fodiens* from Scotland, Poland, Czechoslovakia and USSR (Vologda, Udmurt, Mordov, etc.), measures 20 to 27 mm long in the male and 25 to 46 mm long in the female, and has no spines around the mouth opening, nine or ten esophageal glands, and the spicule 1.95 to 2.4 mm long which corresponds to approximately 8 to 10 % of the body length.

Acanthocephala

Centrorhynchidae

Centrorhynchus elongatum YAMAGUTI, 1935 (juvenile)

Many encysted juvenile forms of this species were attached to the mesentery and great omentum. Eight specimens from the cysts are 2.15 to 3.13 mm long by 0.75 to 1.12 mm wide, and have 28 longitudinal rows of 14 to 15 hooks each on the proboscis and neck.

The juvenile form of *C. elongatum* is previously known from *Sorex unguiculatus* and *S. shinto* from Hokkaido (MACHIDA & FUJIMAKI, 1965; OHBAYASHI, 1975), and from *Dymecodon pilirostris* from Mt. Fuji (OHBAYASHI, 1975). The adult has been detected from the small intestine of *Otus asio semitorques*, *Asio otus otus* and *Strix uralensis hondoensis* from Honshu (YAMAGUTI, 1935, 1939), and from that of *Strix u. japonica* and *Buteo buteo burmanicus* from Hokkaido (MACHIDA & FUJIMAKI, 1965).

要 約

ヒミズはわが国特産の食虫類で、本州、四国、九州、五島、対馬、隠岐に生息している。ヒミズの寄生蠕虫をはじめて報告したのは山口(1954)で、御嶽で捕獲したものの小腸から吸虫 *Brachylaima tokudai* を新種として記載した。その後大林ら(1972, 1973)は日光と富士山のヒミズを調べ、4新種を含む10種の蠕虫を発表した。それらは吸虫 *Ectosiphonous* sp. (小腸寄生), 条虫 *Hymenolepis* sp. (小腸), 線虫 *Thominx urotrichi* (口・咽頭・食道粘膜), *Capillaria himizu* (膀胱), *Angiostrongylus minutus* (肺), *Spirura nipponensis* (胃), *Rhabditis* sp. (胃), *Rhabditoidae* gen. sp. (幼型, 鼻腔・肺), *Toxocara canis* (幼型, 内臓) および *Porrocaecum* sp. (幼型, リンパ節) である。最近、斎藤ら(1982)はカワネズミから新吸虫2種を報告したが、このうちの1種 *Macroorchis chimarrogalus* は山形、新潟のヒミズからも得られたという。今回、伊豆半島の天城峠周辺で小型哺乳類の寄生蠕虫を調査した際、ヒミズから吸虫 *Macroorchis himizu* (小腸寄生) と線虫 *Soboliphyme urotrichi* (胃) の2新種、条虫 *Diphyllobothriidae* gen. sp. (幼型, 皮下) と鉤頭虫 *Centrorhynchus elongatum* (幼型, 腸間膜・大網) の2新記録種がみつかった。この結果、これまでの報告とあわせてヒミズには吸虫4種、条虫2種、線虫9種、鉤頭虫1種、合計16種の蠕虫が寄生していることになる。

なおヒミズの寄生虫相の地理的変異などについては、資料がきわめて不十分であり、今後の調査に期待したい。

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